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REMARKS/ARGUMENTS

The subject Office Action rejected claims 1-4 and 10-13 under 35 U.S.C. 103(a) as being unpatentable over *Loeffler et al.* [6,154,701] in view of *Yamaguchi et al.* [US 2002/0062183]. The Office Action objected to claims 5, 14 and 15 as being dependent upon a rejected base claim, but indicated their allowability if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Finally, the Office Action allowed claims 6-9.

Allowable Subject Matter

Applicants gratefully acknowledge the recognition of the patentability and the allowance of claims 6-9.

The Office Action objected to claims 5, 14 and 15 as being dependent upon a rejected base claim, but indicated their allowability if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5 and 14 have been rewritten in independent form to include all of the limitations of the base claims, and are therefore allowable, per the above.

Claim Rejections – 35 U.S.C. §103

Regarding the obviousness rejection of claims 1 and 10, Applicants respectfully traverse the rejections based on the remarks contained herein below.

As the examiner is well aware, for a rejection based upon 35 U.S.C. §103(a) to prevail, the examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e. that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combine references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ2d 494, 496 (CCPA 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 USPQ2d 1016, 1023 (Fed. Cir. 1996).

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Claim 1 as presented comprises a method for determining preferred operating points within the input operating region of a vehicle powertrain system, including an engine and transmission, to minimize an aggregate system loss within the powertrain. The method comprises defining an output operating region of interest and an input operating region of interest for the transmission. For points of operation within said output operating region of interest, preferred operating points are determined within the input operating region to minimize an aggregate system loss within the powertrain. Claim 1 is not limited to hybrid powertrain systems and contains no limitations related thereto including limitations in any way respecting battery usage.

Applicant respectfully argues that the *prima facie* case of obviousness has not been met because *Loeffler et al.* and *Yamaguchi et al.* alone, or in combination, do not disclose all elements of the invention, as described above. Furthermore, the prior art, coupled with knowledge generally available in the art at the time of the invention, do not contain any suggestion or incentive that would have motivated the skilled artisan to modify a reference or combine references. Specifically, *Loeffler et al.* do not teach minimizing an aggregate system loss in determining preferred operating points within the input operating region. The teachings of *Yamaguchi et al.* are directed toward hybrid vehicles only and therein with respect to operation of the engine or fuel cell to effect a desired battery power flow in accordance with battery SOC. Therefore, claim 1 is patentably distinguishable therefrom.

Furthermore, applicant traverses the examiner's response that the statement "One skilled in the art recognizes that a maximum total drivetrain efficiency term (G_{eta}) corresponds to a minimum aggregate system loss" is somehow relevant to proving an argument for obviousness. Applicant respectfully argues that *Loeffler et al.* teaches that the drivetrain efficiency term (G_{eta}) is an element of aggregate system loss, but is not sufficient to define the aggregate system loss, as is described below. *Loeffler et al.* discloses evaluating possible operating points for a drivetrain including an engine and transmission and selecting an optimal operating point. The selected optimal operating point is taught to be derived in correspondence with the simultaneous maximization of a target function (G) and minimization of a cost function (L) and represented by $F=G-L \rightarrow \text{max}$. The target function (G) is taught to include a transmission output torque reserve term (G_{torque}) and a total

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drivetrain efficiency term (G_{eta}). The cost function (L) is taught to include toxic emission terms ($L_{\text{emission},i}$) and a noise emission term (L_{noise}). Significantly, therefore, the optimal operating point may correspond to less than maximum total drivetrain efficiency since $G-L$ may be maximized when total drivetrain efficiencies are not maximized either because a maximum target function G occurs at combinations of G_{torque} and G_{eta} where G_{eta} is not maximized or the simultaneous maximization of a target function G and minimization of a cost function L (i.e. $F=G-L \rightarrow \max$) occurs at combinations of G_{torque} and G_{eta} where G_{eta} is not maximized.

As previously stated, *Yamaguchi et al.* disclose a control system for a hybrid vehicle including a battery and motor for driving the wheels of the vehicle. *Yamaguchi* merely teaches establishing the ratio of the fuel consumption rate of a power apparatus (e.g. engine or fuel cell) required to generate an amount of power equal to the required power to drive the vehicle to the power required to drive the vehicle. And, based on the battery SOC, a threshold is established which when compared with the ratio determines whether the power apparatus is fueled to generate power above the required power to drive the vehicle and return the excess power to charge the battery or, the power apparatus is fueled to generate power below the required power to drive the vehicle and supplement the power to drive the vehicle by discharging the battery.

Claim 10 as presented is directed toward a hybrid powertrain system including an electrically variable transmission. Furthermore, independent claim 10 comprises determining aggregate powertrain system power losses and determining at least one operating region in transmission input speed (N_i), output speed (N_o) and output torque (T_o) corresponding to minimum aggregate system power losses wherein N_i within said determined operating region represents preferred input operating points. *Loeffler et al.* and *Yamaguchi et al.*, alone or in combination, do not teach determining at least one operating region in transmission input speed (N_i), output speed (N_o) and output torque (T_o) corresponding to minimum aggregate system power losses wherein N_i within said determined operating region represents preferred input operating points.

Based on the above, it is respectfully submitted that the claims 1 and 10 and all claims depending therefrom are allowable over the rejections under 35 U.S. C. 103(a). All pending

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claims are believed to be in a condition for allowance and Applicants respectfully request that same be allowed to proceed to issue.

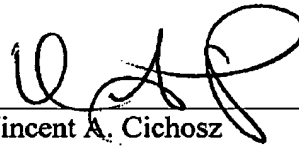
Request for Continued Examination

Applicant is submitting a Request for Continued Examination (PTO Form SB-30) in order to effect a substantive review of the above arguments which respond the examiner's rejections under 35 U.S.C. §103.

Conclusion

Applicant respectfully asserts that the application, including claims 1-15 is now in condition for allowance, and a Notice of Allowance is earnestly requested. If the Examiner has any questions regarding the contents of the present response, he may contact Applicants' attorney at the phone number appearing below.

Respectfully submitted,



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